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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,602	02/11/2002	Bradley W. Smith	14181	4831

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EXAMINER

GORMAN, DARREN W

ART UNIT	PAPER NUMBER
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3752

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/074,602

Applicant(s)

SMITH ET AL.

Examiner

Darren W Gorman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 23-35 is/are pending in the application.
- 4a) Of the above claim(s) 28-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 23-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This communication is in response to the amendment filed October 2, 2003, in paper #10. Claims 1-21 and 23-35 are currently pending, with claims 28-35 being withdrawn.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-9, 11, and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas, USPN 6,164,383, in view of Parkinson et al., USPN 5,992,528 and Nichols et al., USPN 3,972,373.

Regarding claims 1-2, 4-9, 11, 13-14, 16-21, Thomas discloses a modular engine compartment fire detection and extinguishing system (100) for vehicles comprising, a detector (160, 170, 175) for detecting a fire within an engine compartment of a vehicle, a trigger (200) electrically coupled to the detector to generate an initiation signal once the detector detects a fire in the engine compartment (see Figure 1), wherein the trigger comprises a first power source (Battery B) and a second power source (capacitors C-1a and C-2a) positioned proximal to a switch (202), wherein the first power source is coupled to the second power source such that the second power source remains operable when the first power source fails (see Figure 3; and

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column 4, lines 48-54), the switch coupled to the power source and the detector, the switch allowing an initiation signal to flow from the power source to a fire extinguisher (110) (see Figure 1), and a modular distribution line (132) having one end connected to and in fluid communication with the fire extinguisher and the other end connected to and in fluid communication with a nozzle (131) for dispersing a dry powdered fire suppressant within the engine compartment (see column 2, lines 9-15, column 3, lines 13-28, and Figure 1). Thomas also discloses the fire extinguisher as comprising a propellant contained under pressure electrically coupled to the trigger to receive the initiation signal, however Thomas does not disclose the fire extinguisher as being a "gas generant" fire extinguisher comprising a housing that stores gas generant and fire suppressant, the gas generant being stored in one end of the housing, an initiator in communication with the gas generant, and an orifice plate within the housing that separates the gas generant from fire suppressant material, the orifice plate having an exhaust gas orifice formed therein, wherein the exhaust gas orifice allows exhaust gas generated by actuation of the gas generant to pass through the orifice plate and suspend fire suppressant within the exhaust gas. Thomas also does not disclose the modular distribution line comprising a fastener on each end, such that the fasteners allow modular distribution lines to be removably connected to a manifold, the nozzle, and each other by way of a coupler. Further, Thomas does not teach a manifold in fluid communication with the fire extinguisher to allow a flow of exhaust gas exiting the extinguisher to enter one or more distribution lines to disperse fire suppressant throughout the engine compartment.

Parkinson discloses a fire extinguisher cylinder (110), particularly useful in motor vehicle fire suppression systems (see column 1, lines 28-32), for generating a gas propellant to propel a

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dry powdered fire suppressant material (158), also enclosed within the extinguisher cylinder (see Figure 2), in the event of a fire. Parkinson discloses the fire extinguishing cylinder comprising a cylinder housing (112) that stores a gas generant material (131) and fire suppressant material (158), the gas generant material being stored in a second housing (116) within one end of the cylinder housing (112), an initiator assembly (134) in communication with the gas generant, wherein the initiator assembly is arranged to receive an electrical initiation signal to ignite the gas generant material, and an orifice plate (127) within both the cylinder housing (112) and the second housing (116) that separates the gas generant from the fire suppressant material, the orifice plate having an exhaust gas orifice (125) formed therein, wherein the exhaust gas orifice allows exhaust gas generated by actuation of the gas generant to pass through the orifice plate and suspend the fire suppressant within the exhaust gas (see Figure 2; and column 4, lines 20-65).

Furthermore, Nichols teaches a fire extinguishing system for a vehicle engine compartment, which employs a fire suppressant distribution manifold (54) in fluid communication with a fire extinguisher cylinder (10), the manifold allowing the flow of fire suppressant to enter one or more distribution lines (24) to disperse the fire suppressant throughout the engine compartment (see Figures 2 and 5). Nichols also shows modular distribution lines having fasteners (collar-type) at each end thereof, which allow the distribution lines to be connected to the manifold, a nozzle (32), or each other by way of a quick-disconnect coupler (14,16,34) (see Figures 4 and 5), thereby making the fire extinguishing system “economical in cost and adaptable to existing vehicles as well as newly constructed vehicles” (see column 2, lines 28-30).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a gas generant fire extinguisher, as taught by Parkinson, with the modular engine compartment fire detection and extinguishing system, as disclosed by Thomas, in order to more rapidly extinguish the fire or source of flame, especially in the event of a ruptured fuel line.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include fasteners, as taught by Nichols, at each end of the distribution line of Thomas, for allowing removable connection of the distribution line to a distribution manifold, a nozzle, or each other by way of a coupler, in order to be able to configure and adapt the system into virtually any fire hazard zone, including the countless possible dimensions of different motor vehicle engine compartments that exist. Still further, it would have been obvious to include a distribution manifold, as taught by Nichols, with the system of Thomas, in order to allow the system to equally disperse fire suppressant material into more than one distribution line for a faster and more widely dispersed extinguishing response in the event of a fire.

Regarding claims 3 and 15, since the system of Thomas, as modified above, is arranged so that the suppressant is in direct contact with the exhaust gas orifice, the extinguisher cylinder could be mounted in an inverted position without effecting the operability of the system, whereby gravity would maintain substantial contact between the fire suppressant and the exhaust gas orifice.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas in view of Parkinson and Nichols, as applied to claim 1 above, and further in view of Scofield, USPN 5,207,276.

Thomas, as modified, discloses all of the claimed elements as set forth in claim 1, however the detector of Thomas is not disclosed as a linear temperature sensitive cable.

Scofield discloses a fire extinguishing system using intertwined temperature sensitive wires (39), wherein the wires are coated with plastic insulation with a pre-determined melting point, so that the wires communicate electrically with one another when the plastic insulation melts at the pre-determined temperature, thereby sending an electric signal to actuate the fire suppression system (see Figures 1 and 2; column 1, lines 16-18, and column 6, lines 34-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the detectors as disclosed by Thomas, with the linear temperature sensitive cable, as taught by Scofield, in order to reduce the complexity of the detecting portion of the system, as well as to continuously monitor for the presence of fire along a user-selected pre-determined path so as not to limit detection of a fire condition to discreet sensing zones.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas in view of Parkinson and Nichols, as applied to claim 1 above, and further in view of Sears et al., USPN 5,660,236.

Thomas, as modified, discloses all of the claimed elements as set forth in claim 1, however the system of Thomas does not expressly teach the interchangeable use of a liquid suppressant and a dry powdered suppressant.

Sears discloses a fire extinguishing cylinder using gas pressure as a propellant to discharge a suppressant material in a fire hazard area, wherein the suppressant material can be either "a suitable dry powder or water" (see column 2, lines 44-50).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to include liquid (i.e. water), as taught by Sears, as another potential fire suppressant for the system of Thomas, as modified, for suppressing a type of fire that is more responsive to a liquid suppressant than a dry suppressant.

6. Claims 23-24, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas in view of Parkinson and Nichols, as applied to claim 13, and further in view of Scofield, USPN 5,207,276.

Thomas, as modified, discloses all of the claimed elements as set forth in claim 13, and also discloses the fire suppressant as being a dry powdered suppressant, the system as performing the function of coating an engine within an engine compartment with the dry powdered fire suppressant carried by the exhaust gas, and wherein the system operates independently of numerous other vehicle systems. However the system does not disclose the detector as a linear temperature sensitive cable.

Scofield discloses a fire extinguishing system using intertwined temperature sensitive wires (39), wherein the wires are coated with plastic insulation with a pre-determined melting point, so that the wires communicate electrically with one another when the plastic insulation melts at the pre-determined temperature, thereby sending an electric signal to actuate the fire suppression system (see Figures 1 and 2; column 1, lines 16-18, and column 6, lines 34-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the detectors as disclosed by Thomas, with the linear temperature sensitive cable, as taught by Scofield, in order to reduce the complexity of the detecting portion of the

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system, as well as to continuously monitor for the presence of fire along a user-selected pre-determined path so as not to limit detection of a fire condition to discreet sensing zones.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas, as modified above and applied to claim 23, and further in view of Sears et al., USPN 5,660,236.

Thomas, as modified, discloses all of the claimed elements as set forth in claim 23, however the system does not expressly teach the interchangeable use of a liquid suppressant and a dry powdered suppressant.

Sears discloses a fire extinguishing cylinder using gas pressure as a propellant to discharge a suppressant material in a fire hazard area, wherein the suppressant material can be either "a suitable dry powder or water" (see column 2, lines 44-50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include liquid (i.e. water), as taught by Sears, as another potential fire suppressant for the system of Thomas, as modified, for suppressing a type of fire that is more responsive to a liquid suppressant than a dry suppressant.

Response to Arguments

8. Applicant's arguments filed on pages 7-9 of paper #10 with regard to the combination of references used (Thomas, in view of Parkinson and Nichols) as not teaching or suggesting all of the limitations found in the now amended claims 1 and 13, have been fully considered but they are not persuasive.

Applicant states on page 8 that while the Parkinson reference does teach a gas generant fire extinguisher that includes a housing “116”, there is no teaching or disclosure in Parkinson that this housing “116” stores both gas generant and fire suppressant as required by the now amended claims 1 and 13. Applicant further states, “On the contrary, Parkinson teaches that the fire extinguishing material 158 is housed within “chamber 156” – a chamber that surrounds and is clearly positioned outside of the housing 116.”

While element “116” is defined as a housing for the gas generant material in the Parkinson reference, reference number 112 (as seen in Figure 2 of Parkinson) defines “a housing that stores gas generant and fire suppressant. In other words, more than one element disclosed by Parkinson meets the definition of “a housing” as set forth in the now amended claims 1 and 13, including cylinder housing 112, the cylinder housing 112 clearly meeting all of the limitations claimed with regard to the housing of the present invention, including “a housing that stores gas generant and fire suppressant” and any other claimed limitations as set forth in the depending claims.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darren W Gorman whose telephone number is 703-306-4205.

The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mar can be reached on 703-308-2087. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

Darren W Gorman
Examiner
Art Unit 3752

DWG 10/29/03
DWG
October 29, 2003


MICHAEL MAR
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